

Claims

- [1] A device for measuring a three-dimensional (3-D) shape using an irregular pattern, comprising:
irregular pattern generation means for generating an irregular pattern on a surface of an object to be measured;
photographing means for acquiring an image of the object on which the irregular pattern is generated;
a control unit for controlling the photographing means; and
an operation unit for generating data on the 3-D shape by processing the image of the object acquired by the photographing means;
wherein the irregular pattern included in the image is employed as a criterion for searching for correspondence with respect to the data on the 3-D shape while the photographed image of the object is processed into the data on the 3-D shape.
- [2] The device as set forth in claim 1, wherein the irregular pattern generation means is a projector, and the photographing means is at least one camera.
- [3] The device as set forth in claim 1, wherein the irregular pattern generation means is a cloth on which an irregular pattern is formed and that comes into contact with the surface of the object, and the photographing means is at least two cameras.
- [4] The device as set forth in claim 3, wherein the irregular pattern generation means is a sock.
- [5] The device as set forth in any one of claims 1 to 4, wherein the irregular pattern is a pattern in which an irregular portion is formed on a regular pattern.
- [6] The device as set forth in claim 5, wherein the irregular pattern is a pattern in which an irregular stripe is inserted between regularly arranged stripes.
- [7] The device as set forth in claim 5, wherein correspondence is searched for in such a way that, when the photographed image is represented using a gray value, portions in which the gray value abruptly changes are recognized as edges, an edge at which the gray value irregularly changes due to the irregular portion is regarded as a reference edge, and unique identifications are assigned to the edges.
- [8] A method of measuring a 3-D shape using an irregular pattern, comprising the steps of:
generating an irregular pattern on a surface of an object to be measured in a form in which at least one irregular portion is formed on a regular pattern;
acquiring an image of the object, on which the irregular pattern is generated, using photographing means; and

processing the image of the object into data on the 3-D shape using the irregular pattern, which is included in the image, as a criterion for searching for correspondence with respect to the data on the 3-D shape.

- [9] The method as set forth in claim 8, wherein correspondence is searched for in such a way that, when the photographed image is represented using a gray value, portions in which the gray value abruptly changes are recognized as edges, an edge at which the gray value irregularly changes due to the irregular portion is regarded as a reference edge, and unique identifications are assigned to the edges.